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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,999	04/02/2004	Hakan Inanoglu	040129	1986

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QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER

DEPPE, BETSY LEE

ART UNIT	PAPER NUMBER
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2611

NOTIFICATION DATE	DELIVERY MODE
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01/18/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/816,999

Applicant(s)

INANOGLU, HAKAN

Examiner

Betsy L. Deppe

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-14,16-20,22-24,26,27 and 30 is/are rejected.
- 7) ☒ Claim(s) 3,5,6,15,21,25,28,29,31 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 1/17/06.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. The claims are objected to because of the following informalities:
 - a. on lines 2 and 3 of claims 4, 5, 16, 17, 22, and 23, "gains" should be "the gains";
 - b. in claim 15, lines 2 and 5, "gains" should be "the gains"; and
 - c. in claims 26, 29 and 32, "third" on lines 2 and 3 should be "second" since the respective claims from which they depend (i.e. claims 14, 27 and 30) recites only a "first calibration" or the dependency of the respective dependent claims should be changed. For example, in claim 26, line 1, "claim 24" should be "claim 25."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 2, 8, 10 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. In claim 2, the steps on lines 4-5 is confusing since that the test signal ("a test signal" on line 4) sent to the transmitter unit is the same test signal received from the first receiver unit (see "the test signal" on line 5). It is unclear if the transmitter unit sends the "test signal" to the "first receiver unit" that is within the same wireless entity or

should the first receiver unit receive a test signal from a different transmitter in the communication system?

5. With regard to claims 8 and 10, it is unclear what is meant by "set to ratio" of a first diagonal matrix and a second diagonal matrix. For example, how do the elements in the correction matrix relate to the gains of the plurality of receiver units and the plurality of the transmitter units? Also, what is a ratio of two matrices?

6. In claim 26, it is unclear what is meant by "based on two different pilots exchanged with the wireless entity."

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 4, 7, 9, 11, 14, 16, 17, 20, 22-24, 27, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Vaidyanathan et al. (US Patent No. 7,031,669 B2).

9. With regard to claims 1, 14 and 20, Vaidyanathan et al. discloses the claimed invention including an apparatus comprised of a plurality of transmitter units, a plurality of receiver units, and a processor that measures a plurality of overall gains (see " γ ") and determines of each transmitter or receiver unit (see " c_1 "). (See Figures 3-7; column

1, lines 46-57; column 9, line 5 - column 10, line 31; column 11, line 30-column 12, line 48; and column 15, lines 20-25)

10. With regard to claim 4, Vaidyanathan et al. discloses the claimed invention including a correction matrix. (See column 12, lines 1-23)

11. With regard to claims 7, 16 and 22, Vaidyanathan et al. discloses the claimed invention including applying the correction matrix on the transmit path. (See Figures 4 and 5; and column 13, lines 18-20)

12. With regard to claims 9, 17, and 23, Vaidyanathan et al. discloses the claimed invention including applying the correction matrix on the receive path. (See Figure 6 and column 13, lines 18-20)

13. With regard to claim 11, Vaidyanathan et al. discloses the claimed invention including utilizing OFDM. (See column 11, lines 30-31)

14. With regards to claims 24, 27 and 30, Vaidyanathan et al. discloses the claimed invention including an apparatus comprised of a plurality of transmitter units, a plurality of receiver units, and a processor that performs a first calibration and derives at least one correction matrix. (See Figures 3-7; column 1, lines 46-57; column 9, line 5 - column 10, line 31; column 11, line 30-column 12, line 48; and column 15, lines 20-25)

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 12, 13, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaidyanathan et al.

17. With regards to claims 12 and 13, Vaidyanathan et al. discloses the claimed invention except for determining the gains for a plurality of operating points such as a different gain setting or temperature. Since Vaidyanathan et al. discloses that offsets vary over parameters such as voltage and temperature (see column 5, lines 4-26), it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the gains for a plurality of operating points in order to quickly set the correct gain for different parameters.

18. With regards to claims 18 and 19, Vaidyanathan et al. discloses the claimed invention except for implementing the apparatus in a user terminal or an access point. It would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to use the apparatus of Vaidyanathan et al. in either the user terminal or access point of a MIMO system since the specific terminal in which the apparatus is implemented does not affect the functionality of the apparatus.

Allowable Subject Matter

19. Claims 3, 5, 6, 15, 21, 25, 28, 29, 31 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Li et al. (US Pub. No. 2005/0143014 A1 and corresponding US

Patent No. 7,206,550) discloses an antenna subsystem calibration apparatus and method.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Betsy L. Deppe
Primary Examiner
Art Unit 2611